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10/811,326	03/26/2004	Frank M. Cerio JR.	TAZ-259	9467

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EXAMINER	
MCDONALD, RODNEY GLENN	
ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/811,326	CERIO ET AL.	
	Examiner	Art Unit	
	Rodney G. McDonald	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 09 May 2008.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) See Continuation Sheet is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6,7,9-20,26-40,43,45-49,53-55,57-64,67-70,73,74,77-89 and 92-97* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1-3,6,7,9-20,26-40,43,45-49,53-55,57-64,67-70,73,74,77-89 and 92-97.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 35, 92, 94, 95 and 96 are rejected under 35 U.S.C. 102(b) as being anticipated by Yao et al. (U.S. Pat. 6,051,114).

Regarding claims 1, 92, Yao et al. teach a method of operating a deposition system comprising positioning a patterned substrate on a wafer table within a processing chamber. The patterned substrate has features such as a field area, a sidewall and a bottom surface. (See Fig. 1; (See Fig. 3A-3C; Column 5 lines 36-43) Creating a high density plasma in the processing chamber wherein the high density plasma comprises ions of coating material and a large number of process gas ions. (Column 3lines 25-42; Column 6 lines 12-26) Exposing the patterned substrate to the high-density plasma. Performing a Low Net Deposition (LND) process wherein a target and substrate bias power is adjusted to establish an LND deposition rate. (Column 4 lines 7-18; Column 5 lines 44-68; Column 6 lines 1-27) The performing of the LND process step includes depositing material onto the field area at a deposition rate of not more than 30 nanometers per minute while depositing or etching material, or a combination thereof, on the sidewall or the bottom surface or a combination thereof and thereby producing substantially no overhanging material at feature openings. Yao et al.

teach controlling parameters to establish a net zero deposition rate on a field area of a substrate. (See Fig. 3B; Column 6 lines 12-27) Yao et al. teach simultaneous bombardment with ions and deposition. (Column 6 lines 12-18)

Regarding claim 35, Yao et al. teach using an ionized physical vapor deposition chamber. (Column 6 lines 1-11)

Regarding claim 94, Yao et al. teach depositing a seed layer such as copper. (Column 5 line 2)

Regarding claim 95, Yao et al. teach controlling parameters to establish a net zero deposition rate on a field area of a substrate. (See Fig. 3B; Column 6 lines 12-27)

Regarding claim 96, Yao et al. teach simultaneous bombardment with ions and deposition. (Column 6 lines 12-18)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 3, 6, 7, 9-11, 13-20, 26-28, 30-33, 36-40 and 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao et al. (U.S. Pat. 6,051,114) in view of Yasar et al. (US PGPUB2003/0034244 A1).

Yao et al. is discussed above and all is as applies above. (See Yao et al. discussed above)

The differences between Yao et al. and the present claims is that the LND processing time is not discussed (Claim 2), the LND processing time being greater than 150 seconds and less than approximately 250 seconds is not discussed (Claim 3), the power to the target is not discussed (Claim 9), the pressure during LND is not discussed (Claim 6), operating the ICP at a first frequency and adjusting the ICP source to provide an LND ICP power level for at least a portion of the LND processing time is not discussed (Claim 7), the LNP ICP power being 3000 w and less than approximately 6000 W is not discussed (Claim 7), the process gas during the LND process is not discussed (Claim 10), the gas being an inert gas is not discussed (Claim 11), depositing a barrier layer is not discussed (Claim 13), changing the process from an LND process to a No Net Deposition (NND) process comprising a field deposition rate, a sidewall deposition rate or a bottom surface deposition rate and controlling the chamber conditions to change the process form the LND process to the NND process (Claim 14), the NND deposition rate is not discussed (Claims 15-18), the NND processing time varying from 10 to 500 seconds is not discussed (Claim 19), the NND time being greater

than 150 seconds and less than 250 seconds is not discussed (Claim 20), the NND chamber pressure is not discussed (Claim 26), flowing a second process gas into the chamber for NND is not discussed (Claim 27), flowing an inert gas is not discussed (Claim 28), depositing a seed layer is not discussed (Claim 30), repairing a seed layer is not discussed (Claim 31), repairing a barrier layer is not discussed (Claim 32) depositing a barrier layer is not discussed (Claim 33), the deposition system comprising a transfer system is not discussed (Claim 36), performing a second LND process is not discussed (claim 37), utilizing a second chamber for a second LND process is not discussed (Claim 38), performing a second NND process is not discussed (claim 39), performing a second NND process in a second chamber is not discussed (Claim 40), and depositing a barrier layer is not discussed (claim 93).

Regarding claim 2, Yasar et al. teach the processing time for deposition can be between 10 and 500 seconds. (See Fig. 5)

Regarding claim 3, Yasar et al. teach the processing time to be greater than approximately 150 seconds depending on the number of etch and deposition steps. (See Fig. 5)

Regarding claim 9, Yasar et al. teach low power applied to the sputtering target. (Paragraph 0006)

Regarding claim 6, Yao et al. teach the pressure during the LND process can be 5 mT. (See Yao et al. Column 3 lines 56)

Regarding claim 7, Yasar et al. teach operating RF power at a first frequency and adjusting the power to the ICP source. (See paragraph 0061; Table 1)

Regarding claim 7, Yasar et al. teach the ICP power during deposition is 1-7 kW. (See Table 1)

Regarding claim 10, Yasar et al. teach the sputtering gas can be argon gas and nitrogen. (Paragraph 0034)

Regarding claim 11, Yasar et al. teach the sputtering gas can be argon gas. (Paragraph 0034)

Regarding claim 13, Yasar et al. teach depositing a barrier layer. (See Paragraph 0034)

Regarding claim 14, Yasar et al. teach changing from a LND process to a NND process (i.e. an etching process) by adjusting chamber conditions. (See Paragraph 0035)

Regarding claims 15-18, Yasar et al. teach that the deposition rate can be 0 or lower since the deposition can be stopper. (Paragraph 0035)

Regarding claim 19, Yasar et al. teach that the NND process (i.e. etch) is between 10 to 500 seconds. (Fig. 5)

Regarding claim 20, Yasar et al. teach the processing time to be greater than approximately 150 seconds depending on the number of etch and deposition steps. (See Fig. 5)

Regarding claim 26, Yasar et al. teach the chamber pressure to be 2 mT. (See Table II)

Regarding claim 27, Yasar et al. teach utilizing nitrogen during deposition and argon during etching. (Paragraph 0034, 0035)

Regarding claim 28, Yasar et al. teach utilizing argon gas. (Paragraph 0035)

Regarding claims 30, 31, Yasar et al. teach depositing a seed layer or repairing a seed layer since the material is continually deposited. (See Paragraph 0031)

Regarding claims 32, 33, Yasar et al. teach depositing a barrier layer or repairing the barrier layer. (See Paragraph 0035)

Regarding claim 36, Yasar et al. teach utilizing a transfer system to transfer a substrate to a deposition system. (Paragraph 0007)

Regarding claim 37, Yasar et al. suggest depositing a barrier layer and then a seed layer on a substrate. (See Paragraph 0003; 0004) Yasar et al. suggest utilizing the deposition and etch process to deposit these layers. (See Paragraph 0011)

Regarding claim 38, Yasar et al. teach utilizing multiple deposition chambers for depositing layers. (Paragraph 0007)

Regarding claim 39, Yasar et al. suggest depositing a barrier layer and then a seed layer on a substrate. (See Paragraph 0003; 0004) Yasar et al. suggest utilizing the deposition and etch process to deposit these layers. (See Paragraph 0011)

Regarding claim 40, Yasar et al. teach utilizing a second chamber for a second NND process. (See Paragraph 0007)

Regarding claim 93, Yasar et al. teach depositing a barrier layer. (See paragraph 0035)

The motivation for utilizing the features of Yasar et al. is that it allows for metallization of high aspect ratio vias. (Paragraph 0002)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Yao et al. by utilizing the features of Yasar et al. because it allows for metallization of high aspect ratio vias.

Claims 12 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao et al. in view of Yasar et al. as applied to claims 2, 3, 6, 7, 9-11, 13-20, 26-28, 30-33, 36-40 and 93 above, and further in view of Konishi et al. (Japan 09-360040).

The differences not yet discussed is the metal gas. (Claims 12, 29)

Regarding claims 12, 19, Konishi et al. teach utilizing an organometallic gas during sputtering comprising Titanium. (See Konishi Abstract; Machine Translation)

The motivation for utilizing the features of Konishi et al. is that it allows for controlling the composition of the deposited film. (See Konishi et al. Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Konishi et al. because it allows for controlling the composition of the deposited film.

Claim 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao et al. in view of Yasar et al. as applied to claims 2, 3, 6, 7, 9-11, 13-20, 26-28, 30-33, 36-40 and 93 above, and further in view of Gopalraja et al. (U.S. Pat. 6,274,008).

The differences not yet discussed is punch through. (Claim 34)

Regarding claim 34, Gopalraja et al. teach punching through the bottom layer. (Column 13 lines 20-22)

The motivation for utilizing the features of Gopalraja et al. is that it allows for enhancing sidewall coverage. (Column 13 lines 22-23)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Gopalraja et al. because it allows for enhancing sidewall coverage.

Claims 43, 45-49, 53-55, 57-59, 61, 62, 84 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasar et al. (US PGPUB 2003/0034244 A1).

Regarding claim 43, Yasar et al. teach a method of operating a deposition system by positioning a patterned substrate on a wafer table within a processing chamber. (See Figs. 3, 3A, 3B) Creating a high density plasma in the processing chamber wherein the high density plasma comprises a large concentration of metal ions and a large number of process gas ions. Exposing the patterned substrate to the high density plasma. Performing a NO Net Deposition (NND) process, wherein a target power or a substrate bias power or a combination thereof, is adjusted to establish an NND deposition rate, the NND deposition rate comprising an NND field deposition rate, an NND sidewall deposition rate, or an NND bottom surface deposition rate or a combination thereof. Processing the patterned substrate using the NND process, thereby depositing material on sidewalls of features of the patterned substrate or bottom surfaces of features of the patterned substrate, or a combination thereof, wherein a chamber pressure, chamber temperature, substrate temperature, a process gas chemistry, a process gas flow rate, a target material, an ICP power, substrate position, a target power, or a substrate bias power, or a combination thereof, is adjusted during the NND process. (Paragraph 0035; Paragraph 0042; Paragraph 0043)

Regarding claim 48, Yasar et al. teach the NND time processing time can be between 10 to 500 seconds. (Fig. 5, 5B)

Regarding claim 49, Yasar et a. teach the NND time can be greater than approximately 150 seconds depending on the number of etch and deposition steps. (See Fig. 5)

Regarding claim 53, Yasar et al. teach the system includes a target 25 coupled to the wall, a permanent magnet pack coupled to the target, and a DC power source coupled to the target. (See Fig. 3; Paragraph 0032) The target power is substantially reduced therefore suggesting approximately 100 W to approximately 1500 W. (See Paragraph 0035)

Regarding claim 54, Yasar et al. the pressure for the LND can be 2 mT. (See Table II)

Regarding claim 55, Yasar et al. teach the ICP source can be operated at a first frequency and adjusted. (Paragraph 0042; Paragraph 0061)

Regarding claim 57, Yasar et al. the ICP power can be 3000 W. (See Table II)

Regarding claim 58, Yasar et al. teach flowing a first process gas during the NND process. (Paragraph 0035)

Regarding claim 59, Yasar et al. teach the gas to be argon. (Paragraph 0035)

Regarding claims 61, 62, Yasar et al. teach depositing a barrier layer or repairing a barrier layer since the material continually deposits. (Paragraph 0034)

Regarding claim 84, Yasar et al. teach the deposition comprises a physical vapor deposition processing chamber. (See Fig. 3A)

Regarding claim 97, Yasar et al. teach simultaneous deposition and etching where the power is reduced to a low level of a low level deposit. (See Paragraph 0035; Paragraph 0012)

The differences between Yasar et al. and the present claims is that the chamber pressure being 50-100 mTorr is not discussed (Claim 43), the target power level is not discussed (Claim 43) and the deposition rate is not discussed (Claim 43, 45-47).

Regarding the pressure (Claim 43), Yasar et al. teach switching from high pressure deposition to lower pressure etch cycles. (See Paragraph 0048) The deposition pressure can range from 1 to 150 mTorr. (See Paragraph 0046) If the deposition is performed at the high end of the range the etch pressure would be lower. (See Paragraph 0048) If deposition is still occurring during the etch cycle because of the reduced power the thermalization of the sputtered material is desired and the pressure should be 50-150 mTorr. (See Paragraph 0046)

Regarding the target power level (Claim 43), Yasar et al. teach the target power is substantially reduced during the etching therefore suggesting approximately 100 W to approximately 1500 W. (See Paragraph 0035)

Regarding the deposition rate (Claims 43, 45-47), Yasar et al. teach the NND rate to be 0 nm/minute since the power to the target can be stopped or can be reduced to close to 0 by reducing the power to the target (See Paragraph 0035)

The motivation for utilizing the features of Yasar et al. is that it allows for filling of the high aspect ratio holes. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Yasar et al. because it allows for filling high aspect ratio holes.

Claims 64, 67-70, 73, 74, 77-79, 81-83, 85-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasar et al. as applied to claims 43, 45-49, 53-55, 57-59, 61, 62, 84 and 97 above, and further in view of Yao et al. (U.S. Pat. 6,051,114).

Yasar et al. is discussed above and all is as applies above. (See Yasar et al. discussed above)

The differences between Yasar et al. and the present claims is that changing the process from a NND process to a LND process where material is deposited on a field area of the substrate, sidewalls of patterned features, or bottom features or combinations thereof, while producing no substantial overhanging material at the openings wherein a chamber pressure, chamber temperature, substrate temperature, a process gas chemistry, a process gas flow rate, a target material, an ICP power, substrate position, a target power, or a substrate bias power or a combination thereof is adjusted to change the process from the NND process to the LND process (Claim 64), the LND bottom surface deposition rate is not discussed (Claims 67, 68), the LND processing time is not discussed (Claim 69), the LND processing time being greater than approximately 150 seconds and less than approximately 250 seconds is not discussed (Claim 70), the power to the target is not discussed (Claims 73, 74), the pressure during the LND is not discussed (Claim 77), the LND process gas is not

discussed (Claim 78), the LND process gas being an inert gas is not discussed (Claim 79), the LND process depositing a seed layer is not discussed (Claim 81), the LND process to repair a seed layer is not discussed (Claim 82), the LND process to repair a barrier layer is not discussed (Claim 83), the transfer system is not discussed (Claim 85), a second chamber for LND is not discussed (Claim 87) and the second chamber for LND is not discussed (Claim 89).

Regarding claim 64, Yasar et al. teach deposition and etching. (See Yasar et al. discussed above) Yao et al. discusses avoiding deposition at the field regions. (See Yao et al. discussed below) Yao et al. teach a method of operating a deposition system comprising positioning a patterned substrate on a wafer table within a processing chamber. (See Fig. 1) Creating a high density plasma in the processing chamber wherein the high density plasma comprises ions of coating material and a large number of process gas ions. (Column 3lines 25-42; Column 6 lines 12-26) Exposing the patterned substrate to the high-density plasma. Performing a Low Net Deposition (LND) process wherein a target and substrate bias power is adjusted to establish an LND deposition rate, the LND deposition rate comprising an ultra-low deposition rate in a field area of the patterned substrate. Depositing material into features of the patterned substrate while producing substantially no overhanging material at feature openings. (Column 4 lines 7-18; Column 5 lines 44-68; Column 6 lines 1-11)

Regarding claims 67, 68, Yao et al. teach the LND deposition rate to the higher in the trench. (Column 6 lines 22-26)

Regarding claim 69, Yasar et al. teach that deposition can be between 10 seconds and 500 seconds. (See Fig. 5)

Regarding claim 70, Yasar et al. teach the processing time to be greater than approximately 150 seconds depending on the number of etch and deposition steps. (See Fig. 5)

Regarding claims 73, 74, Yasar et al. teach the target power being from 1kw and less than 0.5 kW. (See Paragraph 0006)

Regarding claim 77, Yasar et al. teach the pressure during deposition can be 50 mTorr. (See Table I) The pressure can be adjusted during the cycle. (Paragraph 0042)

Regarding claim 78, Yasar et al. teach the flowing an inert gas into the process chamber. (Paragraph 0034)

Regarding claim 79, Yasar et al. teach the gas can be argon. (Paragraph 0034)

Regarding claims 81, 82, 83, Yasar et al. teach depositing a seed layer or repairing a seed layer or a barrier layer. (Paragraph 0003, 0004, 0011)

Regarding claim 85, Yasar et al. teach utilizing a transfer system to transfer a substrate to a deposition system. (Paragraph 0007)

Regarding claim 86, Yasar et al. suggest depositing a barrier layer and then a seed layer on a substrate. (See Paragraph 0003; 0004) Yasar et al. suggest utilizing the deposition and etch process to deposit these layers. (See Paragraph 0011)

Regarding claim 87, Yasar et al. teach utilizing a second chamber for a second LND process. (See Paragraph 0007)

Regarding claim 88, Yasar et al. suggest depositing a barrier layer and then a seed layer on a substrate. (See Paragraph 0003; 0004) Yasar et al. suggest utilizing the deposition and etch process to deposit these layers. (See Paragraph 0007)

Regarding claim 89, Yasar et al. teach utilizing a second chamber for a second NND process. (See Paragraph 0007)

The motivation for utilizing the features of Yao et al. is that it allows for filling integrated circuits. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Yasar et al. by utilizing the features of Yao et al. because it allows for filling integrated circuits.

Claims 60 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasar et al. in view of Yao et al. as applied to claims 43, 45-49, 53-55, 57-59, 61, 62, 64, 67-70, 73, 74, 77-79, 81-89 and 97 above, and further in view of Konishi et al. (Japan 09-360040).

The differences not yet discussed is the metal gas. (Claims 12, 29)

Regarding claims 60, 80, Konishi et al. teach utilizing an organometallic gas during sputtering comprising Titanium. (See Konishi Abstract; Machine Translation)

The motivation for utilizing the features of Konishi et al. is that it allows for controlling the composition of the deposited film. (See Konishi et al. Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Konishi et al. because it allows for controlling the composition of the deposited film.

Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasar et al. in view of Yao et al. as applied to claims 43, 45-49, 53-55, 57-59, 61, 62, 64, 67-70, 73, 74, 77-79, 81-89 and 97 above, and further in view of Gopalraja et al. (U.S. Pat. 6,274,008).

The differences not yet discussed is punch through. (Claim 34)

Regarding claim 63, Gopalraja et al. teach punching through the bottom layer. (Column 13 lines 20-22)

The motivation for utilizing the features of Gopalraja et al. is that it allows for enhancing sidewall coverage. (Column 13 lines 22-23)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Gopalraja et al. because it allows for enhancing sidewall coverage.

Response to Arguments

Applicant's arguments filed May 9, 2008 have been fully considered but they are not persuasive.

In response to the argument that both Yasar and Yao do not teach simultaneously achieving deposition and etching, it is argued that Yao et al. teach at Column 6 lines 11-26 simultaneously removing material from the field area while depositing material in the field area. Deposition simultaneously occurs in the trench which includes the sidewall and the bottom wall. It is also argued that Yasar et al. teach at Paragraphs 0012 and 0035 simultaneously removing material from the field area and depositing in the trench. In this case during the etching cycle the power to the target is

reduced to reduce the deposition but if the deposition is reduced etching and deposition occur simultaneously. (See Yasar et al. and Yao et al. discussed above)

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/
Primary Examiner, Art Unit 1795

Rodney G. McDonald
Primary Examiner
Art Unit 1795

RM
June 17, 2008